Claims

1. Method for printing of a recording medium,
   - in which potential images of the images to be printed are generated on a potential image carrier (101),
   - in which the potential images are developed via a liquid developer made up of colorant and a photo-polymerizable liquid to form an image film on the potential image carrier (101),
   - in which the image film is transferred onto the recording medium (402),
   - in which the image film is fixed on the recording medium (402) with a UV radiation.

2. Method according to claim 1,
in which the photo-polymerizable liquid is high-ohmic.

3. Method according to claim 1 or 2,
in which the photo-polymerizable liquid is transparent.

4. Method according to any of the preceding claims,
in which the photo-polymerizable liquid comprises acrylester.

5. Method according to any of the preceding claims,
in which the liquid developer is produced via suspension of solid particles (made up of pigments, coated pigments or toner particles with pigments or, respectively, dyes) in the photo-polymerizable liquid.

6. Method according to claim 5,
in which charge control substances that influence the charging of the suspended solid particles is added to the photo-polymerizable liquid.

7. Method according to claim 5,
in which initiators that accelerate the photo-polymerization of the liquid are added to the photo-polymerizable liquid.

8. Method according to claim 5,
in which surface tension-influencing and viscosity-controlling agents are added to the photo-polymerizable liquid.

9. Method according to any of the claims 5 through 8,
in which the proportion of solid particles in the liquid developer is > 10%.

10. Method according to any of the claims 5 through 9,
in which the composition of the photo-polymerizable liquid and of the solid particles suspended therein is selected such that the solid particles in the photo-polymerizable liquid charge with a preferred polarity.

11. Method according to any of the preceding claims,
in which the liquid developer is contained in an inking station and is transported to the potential image carrier (101) via an applicator roller (201).

12. Method according to claim 11,
in which a quantity of liquid developer that is constant per time unit and per area is transported to the potential image carrier (101) with the applicator roller (201).

13. Method according to claim 11 or 12,
in which such a bias voltage is applied to the applicator roller (201) that the transition of the solid particles of the liquid developer into the image areas of the potential image carrier (101) is aided.

14. Method according to any of the claims 5 through 13, in which, of the liquid developer, the solid particles and a portion of the photo-polymerizable liquid migrate from the applicator roller (201) onto the potential image carrier (101) in regions in which potential images are present in order to form the image film there while photo-polymerizable liquid migrates onto the potential image carrier (101) in the regions in which no potential images are present.

15. Method according to any of the claims 5 through 14, in which the solid particles and a portion of the photo-polymerizable liquid migrates from the potential image carrier (10) onto the recording medium (402) or an intermediate image carrier (301) given transfer-printing of the developed potential images.

16. Method according to claim 14 or 15, in which the transfer of the image film onto the intermediate carrier (301) or, respectively, recording medium (402) is assisted by an electrical field existing between the intermediate carrier (301) or, respectively, recording medium (402) and the potential image carrier (101).

17. Method according to any of the claims 14 through 16, in which the transfer of the image film from the intermediate carrier (301) onto the recording medium (402) is supported by an electrical field.

18. Method according to any of the preceding claims, in which a removal roller that is brought into contact with the image film is used to reduce the photo-polymerizable liquid in the image film.

19. Method according to claim 18, in which such an auxiliary potential is applied to the removal roller that the solid particles inking the potential image are repelled by the removal roller.

20. Method according to claim 18 or 19,
in which the photo-polymerizable liquid is reduce by approximately 50% by the removal roller.

21. Method according to any of the preceding claims,
in which, given multi-color printing, the various color separations are successively applied to the potential image carrier (101) and successively transferred onto the recording medium (402) or intermediate carrier (301).

22. Method according to any of the preceding claims,
in which, in multi-color printing, the color separations are collected on the potential image carrier (101) and are subsequently transferred into the recording medium (402) or intermediate carrier (301).

23. Method according to the preceding claims,
in which the print image is fixed on the recording medium via UV light.

24. Method according to claim 23,
in which, given the fixing, the UV light influences the image film such that the solid particles are embedded in a solid, transparent polymer mass via photo-polymerization.

25. Method according to claim 23 or 24,
in which the photo-polymerizable liquid in the non-image regions is solidified into a transparent film.

26. Method according to any of the claims 23 through 25,
in which the UV curing is optimized via adjustment of the spectral distribution and power density of the radiation.

27. Method according to any of the claims 23 through 26, in which a radiation source is used that radiates a combination of ultraviolet light, visible light and infrared radiant heat.

28. Method according to claim 27, in which the wavelength of the ultraviolet light lies in the range from 200 to 400 nm.

29. Method according to claim 27 or 28, in which the wavelength of the visible light lies in the range from 400 to 700 nm.

30. Method according to claim 27, 28 or 29, in which the wavelength of the radiant heat lies in the range from 700 to 10 µm.

31. Method according to any of the claims 27 through 30, in which the radiation is adjusted such that the visible light and the radiant heat generates [sic] the heat required for activation of the for the [sic] photo-polymerization and the UV radiation cures the photo-polymerizable liquid.

32. Method according to any of the claims 27 through 31, in which the wavelengths of the radiation are selected such that the print image is additionally provided with gloss and/or is additionally abrasion-resistant.

33. Method according to any of the claims 28 through 32, in which the wavelength of the UV radiation is set from 320 to 400 nm when a greater penetration depth and a more significant volume effect in the recording medium (402) should be achieved.

34. Method according to any of the claims 28 through 32, in which the wavelength of the UV radiation is selected from 280 to 320 nm when a smaller penetration depth and a more significant curing of the print image on the surface of the recording medium (402) should be achieved.

35. Method according to any of the claims 28 through 32, in which the wavelength of the UV radiation is selected form 200 to 280 nm when a more significant curing of the surface of the print image on the recording medium (402) should be achieved.

36. Method according to claim 35, in which an inert gas is used when an intensified surface hardening should be achieved.

37. Method according to claim 36, in which nitrogen is used as an inert gas.

38. Method according to any of the claims 35 through 37, in which the recording medium (402) is exposed to a corona exposure before and/or after the UV curing.

39. Method according to 38 [sic], in which corona radiation, infrared radiation, visible light and UV radiation of the wavelength 320 to 400 nm is [sic] combined when a good liquefaction [sic] of the print image and a good bonding with the surface of the recording medium (402) should be achieved with high surface gloss.

40. Method according to claim 39,

in which a post-fixing with a UV radiation of the wavelength 200 to 280 nm is implemented when a hard surface of the print image should be achieved.

41. Method according to any of the claims 24 through 40, in which a roller stamping can follow given a UV pre-fixing with reduced power density.

42. Method according to the claims 24 through 41, in which a UV radiation is used to increase the viscosity of the image film.

43. Method according to claim 42, in which the image film is additionally exposed to a corona radiation.

44. Method according to claim 42 or 43, in which the viscosity increase of the image film is such that the transfer printing of the image film onto the recording medium (402) occurs via contact pressure.

45. Electrographic printer or copier device, in which transfer-printed print images (503) is [sic] fixed on a recording medium (402) according to the method according to any of the preceding claims.